

*A PRELIMINARY ANALYSIS OF SELF-CONTROL WITH AVERSIVE
EVENTS: THE EFFECTS OF TASK MAGNITUDE AND DELAY ON THE
CHOICES OF CHILDREN WITH AUTISM*

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When faced with a choice between two aversive events, a person exhibits self-control by choosing a smaller, more immediate aversive event over a larger, delayed aversive event. Task demands are often aversive to children with autism and other developmental disabilities. The purpose of this study was to evaluate behavioral sensitivity to differences in the amount and delay of tasks as part of a preliminary study on self-control. Participants were 2 children with autism who engaged in problem behavior maintained by escape. Results indicated a lack of self-control with respect to choosing between two aversive tasks and suggested potential strategies for increasing self-control (i.e., choosing a small immediate task over a large delayed task).

DESCRIPTORS: aversive events, self-control, task magnitude, task delay

Research findings indicate that problem behavior exhibited by children with developmental disabilities is commonly shaped and maintained by escape from or avoidance of tasks (e.g., Iwata et al., 1994). A choice may be established when a child is instructed to complete an aversive task. If the child exhibits problem behavior, the child may receive negative reinforcement in the form of escape from the task and possibly delay of further instruction. However, if the child chooses to work on the task instead, the child may receive punishment in the form of exposure to the aversive task (and possibly additional work after its completion), along with a small amount of positive reinforcement in the form of praise. Under such an arrangement, it is not surprising that the child will frequently engage in problem behavior rather than complete aversive tasks

(Iwata, Pace, Kalsher, Cowdery, & Cataldo, 1990).

A number of effective treatments have been developed for escape-maintained behavior, including extinction, differential negative reinforcement of alternative behavior, and demand fading. Research findings also suggest that giving students opportunities to choose among several tasks can decrease the likelihood of escape-motivated behavior (Romaniuk et al., 2002). Further research is needed on factors that influence choice, especially when choice is provided within the context of aversive events such as task demands.

The concept of self-control is relevant to choice situations that involve aversive events. An individual is said to exhibit self-control when behavior is more sensitive to delayed consequences than to immediate consequences. When the consequence is reinforcement, self-control is defined as selecting the response that produces a large delayed reinforcer (e.g., saving money now to purchase a home next year) over the response that produces a small immediate reinforcer (e.g., spending money now to attend

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a concert). When the consequence involves aversive events, self-control is defined as selecting the response that produces a small immediate aversive event (e.g., going to the dentist now for a routine cleaning) over a response that produces a large delayed aversive event (e.g., going to the dentist only when a root canal is needed).

When a child must choose between two aversive tasks—one that is large but can be completed later and one that is small but must be completed immediately—the child exhibits self-control by choosing the immediate but smaller task. Although no applied research has been conducted in this area, basic studies indicate that children often lack self-control when choices involve aversive events (Grusec, 1968). Basic research also has identified several strategies that might increase self-control. These include increasing the delay to both tasks by the same amount, increasing the amount of the large task, or decreasing the amount of the small task (DeLuty, 1978; Grusec).

Although it would be beneficial to establish a self-control repertoire as part of treatment for negatively reinforced behavior, no studies have examined the sensitivity of choices of children with autism or other developmental disabilities to parameters of aversive events that are specific to self-control situations. Thus, the first step is to examine the sensitivity of choices to the delay and magnitude of aversive tasks. The purpose of the study was to evaluate behavioral sensitivity to differences in the amount and delay of tasks. We also conducted a preliminary analysis of factors that might influence self-control after determining that the participants failed to demonstrate self-control.

METHOD

Participants and Settings

Participants were 2 children who had been diagnosed with autism and who engaged in aggression and disruption. Both were 4 years old, communicated vocally using complete sentences, and followed three-step instructions.

Results of a pretreatment functional analysis indicated that their problem behavior was maintained by escape from demands (data are available from the first author). John's sessions were conducted in an unused room at his school. Archie's sessions were conducted in a therapy room at a university-based early intervention program. Both rooms contained tables, chairs, and the materials needed to conduct the sessions.

Response Measurement and Reliability

For John, choice of Task 1 versus Task 2 was defined as sitting in a chair that was placed directly in front of the designated task. Archie's choice response was defined as touching a picture card associated with the designated task. Previously trained undergraduate and graduate students collected frequency data on the choice response using laptop computers, and the data were expressed as a percentage of opportunities. A second observer independently collected data during 36% of the sessions for John and 74% of the sessions for Archie. Mean occurrence agreement for the choice response was 99% (range, 80% to 100%) for John and 95% (range, 80% to 100%) for Archie.

Procedure

In all conditions, participants were asked to choose between two tasks that differed only with respect to the amount of work that was needed to complete the task or the amount of time that passed between the choice response and the start of the task. Tasks used during the demand condition of the functional analysis were selected for the study. John's task was placing letters in a puzzle, and Archie's task was identifying letter sounds spoken by the therapist by pointing to the correct letter card from among two concurrently presented cards. For John, the puzzles were placed on opposite ends of a table. The therapist physically guided John to a location that was equidistant from the two tasks at the beginning of each choice trial and instructed him to pick a task. For Archie,

picture cards associated with each task were placed on a table. The therapist physically guided Archie to a location that was equidistant from the two cards and instructed him to pick one. Participants were verbally prompted to choose if they failed to make a choice response within 10 s of the instruction. Reinforcement in the form of a highly preferred food item was delivered for engaging in the choice response to increase the likelihood of a choice. Once the task began, instructions were delivered continuously using a three-step prompting sequence (verbal, model, physical guidance), and praise was delivered on a fixed-time (FT) 15-s schedule. All sessions consisted of five choice trials. The left-right positions of the tasks or choice cards were alternated each session. Two forced-choice trials were conducted prior to each session so that the participants would be exposed to the contingencies associated with each choice.

Magnitude analysis. Participants chose between different amounts of the task. The task amount for John was defined by the number of puzzle pieces that had to be inserted into the puzzle (3 or 24). To assist with discrimination, the designated number of puzzle pieces was placed next to each puzzle. The number of letter sounds that Archie was required to identify (5 or 10) defined the amount of the task. To assist with discrimination, pictures illustrating the different amounts of work were drawn on the choice cards. Immediately after the choice, the therapist initiated the prompting sequence and continued until the task was completed. The participant was prompted to make another choice 60 s after the completion of the task.

Delay analysis. Participants chose between a task that had to be completed immediately versus one that had to be completed after a 60-s delay. A medium amount of the task was used during this analysis (12 puzzle pieces for John and 10 letter sounds for Archie). To assist with discrimination, the task or card associated with

the delay was placed on the side of the table that was opposite to the chair, whereas the task or card associated with the immediate task was placed directly in front of the chair. If the participant selected the immediate task, he was prompted to make another choice 60 s after the completion of the task. If the participant selected the delayed task, he was prompted to make another choice 10 s after completion of the task (to give the therapist an opportunity to prepare the task materials). To control for the immediacy and density of attention across immediate versus delayed tasks, attention was delivered on an FT 15-s schedule during the delay or intertrial interval as well as during the task. The participant could move freely around the room during the delay but did not have access to any leisure materials.

Self-control analysis. In the first phase, John was instructed to choose between a small immediate task and a large delayed task. Procedures were similar to those in the other analyses. Because John showed self-control, the amount of the immediate task was increased from small to medium (from 3 pieces to 12 pieces) to determine if the amount of the immediate task might influence self-control. After he failed to show self-control, the effects of increasing the delay to both tasks by 10 s and 20 s were evaluated.

Archie's self-control analysis was slightly different. In the first phase, Archie chose between a small immediate task and a medium delayed task. Procedures were similar to those in the other analyses. Next, the effect of increasing the delay to both tasks by an equivalent amount was evaluated (20 s were added to each initially, followed by 30 s). When this failed to alter self-control, we examined the effects of increasing the size of the delayed task (from 10 letter sounds to 20 letter sounds) as well as decreasing the size of the immediate task (from five sounds to one sound) and the delay to both tasks.

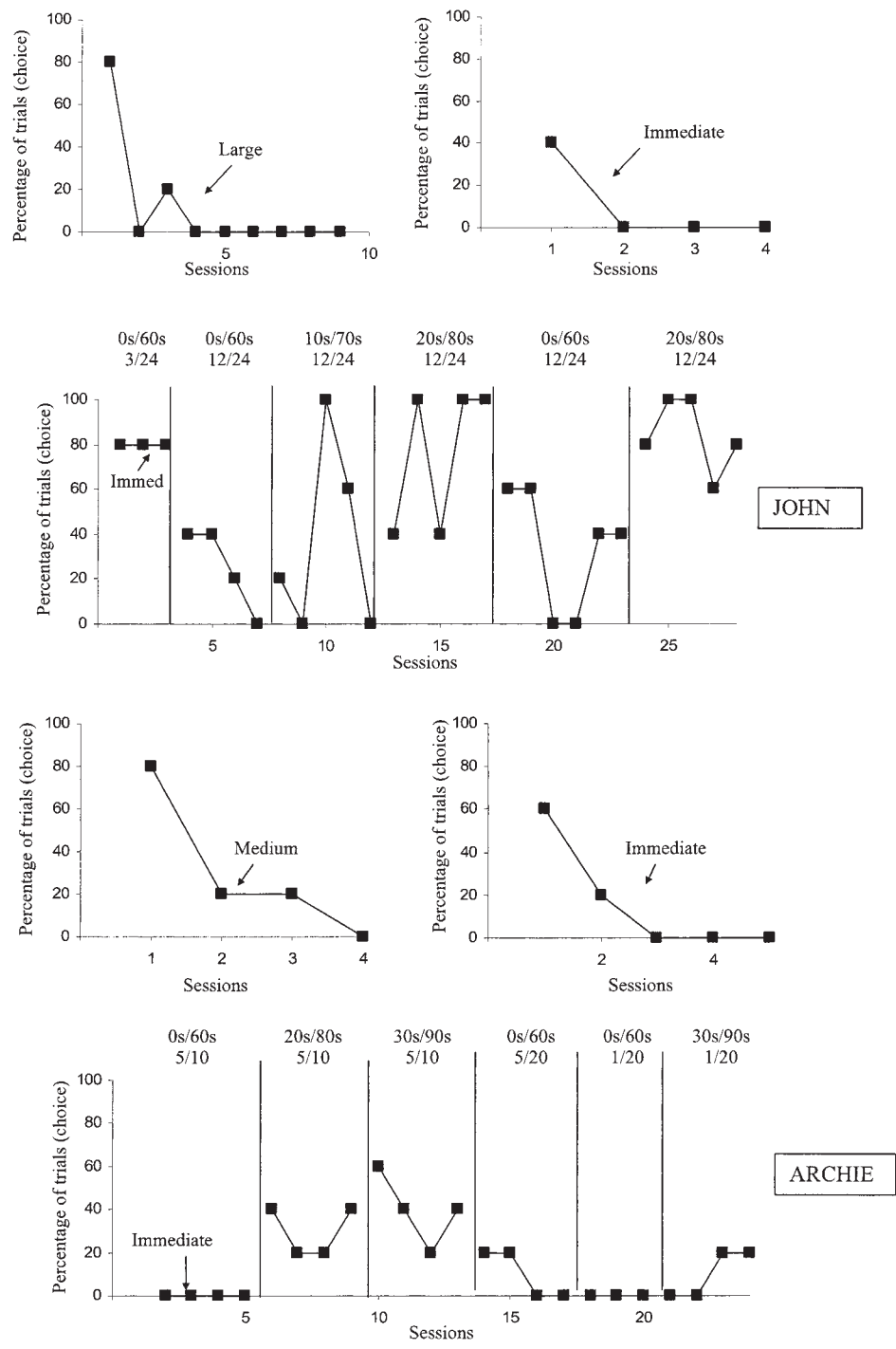


Figure 1. Percentage of trials in which John (top two panels) and Archie (bottom two panels) chose the large or medium task over the small task during the magnitude analysis (top and third left panels); the immediate task over the delayed task during the delay analysis (top and third right panels); and the small immediate task over the large delayed task during the self-control analysis (second and fourth panels). Numbers indicate the delay values (in seconds) and amount of task associated with each choice during the self-control analysis.

RESULTS AND DISCUSSION

During the initial analyses of magnitude and delay, John consistently chose the small task over the large task and the delayed task over the immediate task (top two panels of Figure 1). These results indicated that the tasks functioned as aversive events. In the first phase of the self-control analysis (second panel), John demonstrated self-control by consistently selecting the small immediate task over the large delayed task. This suggested that his behavior was more sensitive to the amount of the task than to the delay. Thus, in the next phase, the amount of the immediate task was increased (from small to medium) to determine if John would continue to show self-control. He immediately began to choose the delayed task more than the immediate task. Choice became more variable when the delay to both tasks was increased by 10 s. He showed a somewhat clearer preference for the medium immediate task when the delay to both was increased by 20 s. This finding was replicated following a reversal to the 0-s versus 60-s delay values.

Archie also consistently chose the delayed task over the immediate task and the small task over the medium task during the initial analyses of magnitude and delay (third panel of Figure 1). These results indicated that the tasks functioned as aversive events. Unlike John, Archie did not show self-control in the first phase of the self-control analysis (bottom panel). He consistently selected the medium delayed task over the small immediate task. Choice became more variable when the delay to both tasks was increased by 20 s and 30 s, but he continued to choose the delayed task on more trials than the immediate task. In lieu of increasing the delay further, we manipulated the magnitude of the tasks. Beginning with the fourth phase, the size of the delayed task was doubled. This manipulation failed to influence self-control, even when the size of the immediate task was decreased (to a single letter sound) in the fifth

phase and a 30-s delay was introduced in the sixth phase.

Results of this preliminary investigation showed that the choices of 2 children with autism who engaged in problem behavior maintained by escape from demands were sensitive to differences in the amount and delay of aversive tasks. For John, the amount of the immediate task and the length of the delays associated with the tasks seemed to influence self-control. However, these factors had less influence on the self-control responses for Archie. It may be beneficial to establish a self-control repertoire as part of treatment for negatively reinforced behavior. That is, commonly used treatments may be more effective if a child's behavior is less sensitive to the immediate (aversive) consequence that is associated with engaging in a requested task. Thus, more research is needed to evaluate strategies to increase self-control when choices involve aversive events such as task demands.

Future research will need to address several methodological issues that arose in the current investigation. First, differences in the amount of task during the magnitude analysis and differences in the delay to the task were necessarily associated with differences in the delay to negative reinforcement (removal of the task). Second, the overall density of attention was not equivalent for the two response options during the self-control analysis because the large delayed task took longer to complete than the small immediate task. In future studies, the interval between the start of a choice trial and the next choice trial could be held constant. However, the density of negative reinforcement (i.e., break from the task) would then be disparate across the response options.

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